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**WORLD OCEAN  
Summit Virtual Week**

Achieving 2030 goals

**Summary paper**  
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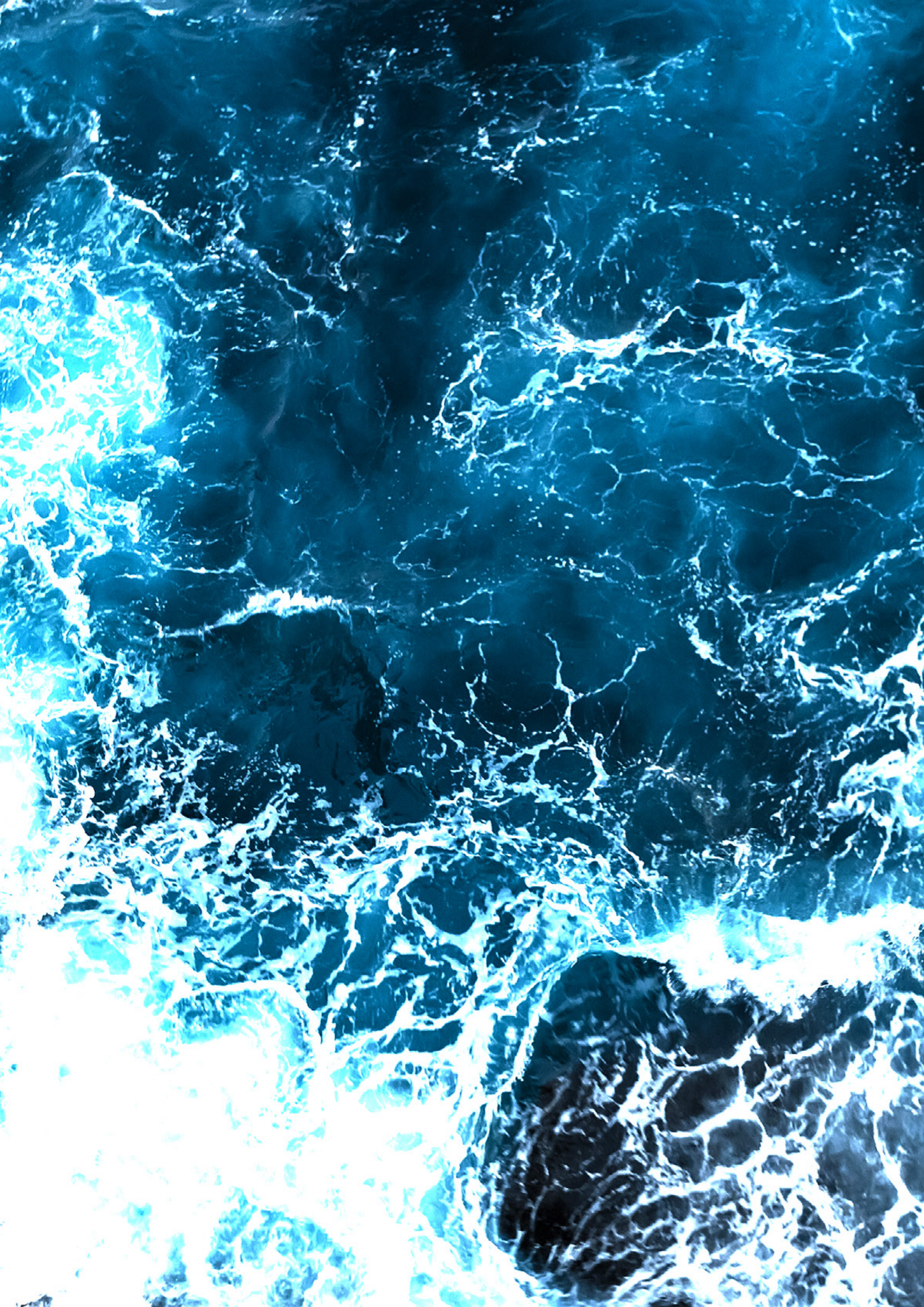


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# Executive summary

Targets to achieve a healthy ocean by 2030 are being jeopardised by a lack of coordinated global action on key challenges including climate change, biodiversity loss and ocean pollution. However, ocean leaders and industry experts at the 9th World Ocean Summit showcased how a number of sectors are already taking measures to preserve ocean health and build a thriving, sustainable blue economy.

## **Experts and leaders balanced optimism with calls for urgent action**

The summit, attended by more than 4,000 people across 100 countries, ran from March 1st to March 4th 2022. Focusing on six industry tracks—aquaculture, energy, fishing, plastics, shipping and tourism—the event hosted over 150 speakers from government, industry, academia, business and civil society. The talks provided insights on solution implementing and scaling up solutions to mitigate—and where possible prevent—catastrophic threats to ocean ecosystems.

In addition to actionable guidance, speakers presented innovations and technologies that have the ability to leverage the ocean's renewable-energy potential, increase sustainable aquaculture production, and protect marine life.

Pollution, overfishing, and maritime greenhouse-gas (GHG) emissions were identified as significant obstacles to achieving the 2030 targets. Speakers agreed that ecosystem restoration will allow the ocean to absorb more emissions than previously understood. They also emphasised that a coordinated global response to rapidly reduce GHGs to keep global warming below 1.5 degrees above pre-industrial levels is mission-critical, given the devastating consequences to human and planetary health that would result from hotter future scenarios.<sup>1</sup>

With the UN Ocean Conference, the UN Biodiversity conference (COP15) and COP27 scheduled to take place in 2022, there are several opportunities for key global players to convene and shape international ocean policy.

Speakers expressed hope that the high-level ocean and climate meetings happening this year will result in a global agreement to protect 30% of the ocean by 2030, a World Trade Organisation (WTO) agreement to end subsidies that harm fisheries, and a High Seas Treaty to give legal protections for international waters.

### **Good ocean governance: some entities have a greater responsibility to act swiftly**

With 2030 quickly approaching, accelerating the shift to a sustainable blue economy is a high priority. Strong policies for ocean protection and ecosystem preservation can only do so much without both public and private financial backing. With regard to internal, systemic change, business leaders across sectors are evolving practices and addressing supply-chain issues to meet climate and economic goals.

As was evident from multiple sessions, governments and international bodies are becoming more ambitious about curbing GHG emissions, which are already impacting marine ecosystems. The EU in particular featured throughout summit conversations: its commercial policies push for awareness of humanity's reliance on healthy oceans to meet ocean and climate objectives. In addition to the EU's efforts, the European Commission has created a policy framework with its Green Deal. The comprehensive plan sets out pathways to curb EU emissions by 55% by 2030 compared with 1990 levels and to achieve carbon neutrality by 2050. Its policies include ensuring the sustainability of Europe's blue economy.<sup>2</sup>

Global programmes that champion fresh thinking and innovative sustainability initiatives, such as the Fishackathon and Blue Carbon Challenge, celebrate collaboration while providing resources and visibility for impactful solutions. In this spirit, the summit concluded with the launch of the World Ocean Initiative's 2022 Ocean Changemakers Challenge, a competition designed to support bold "blue" thinkers with market-ready ideas or early-stage projects.<sup>3</sup>

<sup>1</sup> <https://www.ipcc.ch/report/sixth-assessment-report-cycle>

<sup>2</sup> [https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal\\_en](https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en)

<sup>3</sup> <https://ocean.economist.com/changemakers-2022>

## **The ocean-climate nexus: mounting risk to marine habitats due to rising temperatures**

COP27 in November 2022 will be a crucial platform to reflect on restricting GHGs in the light of declining ocean health and marine habitat degradation due to human-driven climate change. “This has to be the year of implementation and, in the case of countries that didn’t step up to make commitments [in COP26], they have to now step up,” said keynote speaker John Kerry, US special presidential envoy for climate.

**“This has to be the year of implementation and, in the case of countries that didn’t step up to make commitments [in COP26], they have to now step up.”**

**John Kerry**, US special presidential envoy for climate

“We have to raise global ambition. If we don’t reduce emissions sufficiently, we will not reverse the chemical deterioration of the ocean itself,” he warned, speaking of acidification of the oceans.

“You cannot solve the problems of the ocean ... without addressing climate head on. And you can’t solve the problem of climate without addressing the ocean head on,” said Mr Kerry.

Helen Ågren, Ambassador for the Ocean at the Swedish Ministry for Foreign Affairs, affirmed that through events like COP26 policymakers are placing greater importance on nature-based solutions to remedy the impact of climate change on the ocean.

The ocean has the potential to safely absorb and decrease GHG emissions, given enough care. According to Carlos Duarte, professor of marine science at Saudi Arabia’s King Abdullah University of Science and Technology, the restoration of sea habitats, including seagrass, mangroves, saltmarshes and seaweed, along with the preservation of large marine animals—and more—can mitigate 15% of the emissions that need to be removed from the atmosphere.

## Progress towards Sustainable Development Goal 14

The world is not on track to meet Sustainable Development Goal 14—to conserve and use oceans for sustainable development—said Amina J. Mohammed, UN deputy secretary-general and chair of the UN Sustainable Development Group.

“We are seeing a warming of the oceans ... we’re seeing much more pollution in the oceans ... the destruction of habitats ... overfishing,” she said. “We are concerned about the many coastal communities where women and young people’s livelihoods are under threat.”

However, gradual change to embrace a blue economy is evident. Some fish populations are recovering, GHG emissions from marine industry and shipping are now receiving more attention, and there has been progress on agreements around marine protected areas, Ms Mohammed said.

## Chemical pollutants: the invisible threat to our ocean

A report launched at WOS by Back to Blue, an initiative of Economist Impact and The Nippon Foundation, highlighted a huge array of potentially hazardous and dangerous pollutants entering the oceans.<sup>4</sup> Chemical pollutants include fertilisers, heavy metals, persistent organic pollutants (POPs), pesticides, plastics, pharmaceuticals, radioactive materials and most household products.

While the extent and gravity of chemical pollution is poorly known and understood by governments, industries and civil society, scientists note that the phenomenon has permeated nearly every corner of the ocean and threatens the ecosystems that many species—and humans—rely on. About 80% of marine pollution is run-off from the land, and 20% comes from ships and ocean-based extractive industries.

A systemic and coordinated global response is needed from chemical producers and their customers, regulators, the finance sector and civil society, says the report.

<sup>4</sup> <https://backtoblueinitiative.com/marine-chemical-pollution-the-invisible-wave>

## **Blue finance: “It’s time to shift the investment needle”**

A new toolkit to help investors fund activities which align with sustainable ocean principles was launched at the summit by Dennis Fritsch, a sustainable blue finance lead at the UN Environment Programme Finance Initiative (UNEP FI). “Diving Deep” focuses on solid-waste pollution and coastal infrastructure, giving financial institutions guidance on which financial instruments to seek out, which to challenge and which to avoid completely.<sup>5</sup>

Peter Thomson, UN special envoy for the ocean, stated that a sustainable blue economy is vital for people’s future security. “It is time for us to shift the investment needle—whether it’s public monies or private monies—in the direction of the sustainable blue economy,” he said.

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**Peter Thomson**, UN special envoy for the ocean

As investment remains integral to the effective and quick scale-up of global technology to support the blue economy, public banks can play a vital role because they bring much-needed risk-bearing capacity and can wait years for a return on their investments, said Ricardo Mourinho Félix, vice-president of the European Investment Bank (EIB). To aid sustainable development, the EIB aims to attract both public and private investment for the ocean economy in conjunction with its Blue Sustainable Ocean Strategy (Blue SOS), which supports the investment of billions of euros in sustainable ocean projects, including sustainable coastal development, seafood production and green shipping.

Governments need to set out clear frameworks for the transition to sustainable blue-ocean economies to encourage more investment, especially from the risk-averse private sector, said Vitor Vasconcelos, president of the board at the Interdisciplinary Centre of Marine and Environmental Research (CIIMAR) and professor at the University of Porto in Portugal.

<sup>5</sup> <https://ocean.economist.com/blue-finance/articles/is-private-finance-ready-for-an-ocean-super-year>



## Industry tracks Aquaculture

Cutting-edge innovations, including new satellite technologies, will help the expansion of aquaculture practices while reducing aquaculture's environmental impact and making farmed fish more efficient to produce, industry experts said.

Aquaculture provides one of the most sustainable and fastest-growing sources of animal protein. The industry produces 52% of the world's fish that are used for human consumption, according to the FAO.<sup>6</sup>

Fish farms have become increasingly efficient and sustainable with the growth of technologies which can remotely monitor farm activities—including metrics relating to fish health, growth rate and water quality—and control feed timings, among other interventions.

Farms in remote locations that lack connectivity rely on staff visiting the sites to monitor the fish. This limits the amount of information that can be gathered, and when, and slows the interventions. Scottish salmon farms, for instance, can be cut off for days by storms, said Allan Cannon, chief executive of R3 IOT, a company that combines satellite technology with the Internet of Things (IOT) to offer comprehensive and innovative data-monitoring and -collection services.

Advanced satellite technology could change that. Combining advanced satellite communication technology with advanced analytics provides insights for industries to manage their operations in a much more efficient way, said Mr Cannon, whose company provides data services in locations lacking traditional communications infrastructure.

<sup>6</sup> [https://www.fao.org/3/ca9229en/online/ca9229en.html#chapter-1\\_1](https://www.fao.org/3/ca9229en/online/ca9229en.html#chapter-1_1)

The new technologies will also enable salmon farms to move farther out to sea. Some businesses want to establish salmon farms up to 6km off the coast, where they have less impact on the environment. Satellites mean even such distant farms can be remotely controlled, said Mr Cannon.

### **Farmed fish offer immense nutritional value that public health systems are yet to recognise**

Farmed salmon delivers a healthy source of protein with a much smaller carbon footprint than land-based animal protein. It will help feed the world's booming population, said Vlada Demydova, regional sales director, EMEA at Aquachile. The Chile-based company is one of the world's largest producers of farmed salmon.

Most aquaculture is in the form of crustacea and seaweed, and is produced by small-scale producers in developing countries, said Jennifer Kemmerly, vice-president, global ocean initiatives at California's Monterey Bay Aquarium.

### **“Most aquaculture is in the form of crustacea and seaweed, and is produced by small-scale producers in developing countries.”**

**Jennifer Kemmerly**, vice-president, global ocean initiatives, California's Monterey Bay Aquarium

Many of these producers need basic infrastructure like roads and cold storage, but they also need technology transfer from Western companies to avoid overusing chemicals, including antibiotics and microbials, she said.

Chemical use is likely to jump with climate change, as warming waters can increase instances of disease. In countries where aquaculture develops without strict regulations, farmers might respond with prophylactic chemical use, explained Ms Kemmerly.

“That is going to have ecosystem—and even public health—impacts that we don't yet fully understand,” said Ms Kemmerly.





## Industry tracks Energy

Much of the ocean's renewable energy potential is still untapped. Without proper leverage of these resources, meeting net-zero goals seems far off.

Many countries are ramping up the presence and output of their offshore wind farms. Wind power generation capacity in Europe currently stands at 236 gigawatts (GW).<sup>7</sup> European plans to deploy off-shore wind farms could generate 450GW by 2050, said António Sarmento, founder and president of the board of directors of WavEC Offshore Renewables in Lisbon. This is equivalent to about 450 US-based nuclear power plants and requires at least 40,000km<sup>2</sup> of ocean—an area nearly the size of Denmark—without damaging fisheries or marine protected areas (MPAs), or encroaching on other demands on the region's seas, said Mr Sarmento.

One solution he proposes is to create wind farms which protect and restore the marine environment, and that generate jobs as well as energy. The base of wind farm developments can already act as “artificial reefs” for marine life, but organisations like the Offshore Coalition for Energy and Nature (OCEAN) are encouraging biodiversity-first developments that benefit marine life as well as generating clean, renewable energy.<sup>8</sup>

### **Digitising data collection efforts can help better manage aquatic systems**

A significant amount of data is gathered during the engineering and deployment phase of off-shore wind farms, data which can be made available online during their operation, said Mr Sarmento, who is a former associate professor of mechanical engineering at the University of Lisbon.

<sup>7</sup> <https://windeurope.org/intelligence-platform/product/wind-energy-in-europe-2021-statistics-and-the-outlook-for-2022-2026>

<sup>8</sup> <https://offshore-coalition.eu>

If companies are willing to share the sheer quantity of collected data, it is possible to create digital twins of the farm areas and beyond. This can help establish and grow wind-farm projects where the environment is well monitored and protected against unwanted fishing. The Maritime Spatial Planning department of the EU suggests useful tools and resources for establishing these types of projects—one key recommendation is working directly with fishermen in the area planned for development.<sup>9</sup>



This kind of data can also help turn wind farms into integrated aquaculture farms that have the co-benefits of producing energy, algae, seaweed, shellfish and more. Underwater growth like algae, seaweed and kelp help mitigate climate change by capturing CO<sub>2</sub> from the atmosphere, and shellfish filter water and improve its quality, which increases the population size and biodiversity of species in the area. Both sea plants and shellfish are also marketable products.

If these integrated wind-aquaculture farms monitor the state of the marine environment, they can also assign a stamp of quality to everything that is fished or produced in the area. This would increase the value of harvested products, said Mr Sarmiento.

**“If these integrated wind-aquaculture farms monitor the state of the marine environment, they can also assign a stamp of quality to everything that is fished or produced in the area.”**

These types of integrated energy-aquaculture projects are still mostly conceptual, and there is much to be explored. In 2021, however, China announced plans for what it claimed would be a “world first” floating fish-wind farm.<sup>10</sup>

<sup>9</sup> <https://maritime-spatial-planning.ec.europa.eu/sector-information/offshore-wind-and-fisheries>

<sup>10</sup> <https://www.intrafish.com/aquaculture/china-plans-world-first-floating-fish-and-wind-farm-linkup/2-1-985255>

### The power of water

Tidal and wave power are some of the largest untapped renewable-energy sources alongside solar and wind energy, said Benjamin Lehner, project portfolio manager at the Dutch Marine Energy Centre (DMEC).

Tidal energy has the advantage of offering reliable energy which can be predicted years in advance. And its untapped potential is huge—thousands of terawatt-hours for wave energy, and hundreds of terawatt-hours for tidal energy, Mr Lehner said.

Several large-scale deployments are hitting the water each year. Mr Lehner is working on one which combines wind, wave and offshore solar energy—sharing the same infrastructure, and using the same space. Integrated design and systems thinking is one resource-efficient way to tackle many challenges at once. The Netherlands, for example, is developing a project which combines energy production with coastal protection.<sup>11</sup>

But for the sector to develop, governments need to set clear targets for 2025 as a stepping stone for 2030 targets, and they need to back these up with permits for deployment and the financial support needed to attract private capital, said Mr Lehner.

The sector also needs investors and banks to make capital accessible for scaling up and ultimately to reduce the overall costs.

Mr Lehner urged utility companies and other organisations with the capacity to build new offshore developments to be open-minded about this new sector.

“The wave and tidal world has had ups and downs, but right now we’re in a strong up,” he said.

Investment in these sources is already popular, with Canada, the US, South Korea, Indonesia, China and countries in Europe setting milestone targets for scaling up by 2025, 2030 and 2050. The EU plans to ramp up its wave and tidal capacity from 13MW in 2020 to 1GW by 2030 and 40GW by 2050.<sup>12</sup>

<sup>11</sup> <https://www.innovationnewsnetwork.com/marine-energy-netherlands-zero-carbon-future/14076>

<sup>12</sup> <https://www.ocean-energy-systems.org>



## Industry tracks Fisheries

Some fish populations are plummeting, with just 66% of fish stocks sustainably fished in 2017, down from 90% in 1990.<sup>13</sup> Leading experts, however, assert that the world's overfished seafood stocks can recover if governments, fisheries, retailers, consumers and conservationists work together to ensure that they are responsibly managed.

Sustainable fishery management is costly, but the cost of inaction is much greater, said Rupert Howes, chief executive of the Marine Stewardship Council (MSC).

About 60 million people depend on fisheries and aquaculture for their livelihoods, and 3.3 billion people depend on seafood for 20% of their daily protein needs, says the UN Food and Agriculture Organisation (FAO).

Without strong political leadership, overfishing will accelerate and millions will risk losing their livelihoods, said Mr Howes.

Governments need to ratify the Port State Measures agreement which targets illegal, unreported and unregulated (IUU) fishing. Currently only 70 countries have ratified it.<sup>14</sup> WTO talks on eliminating subsidies harmful to fish populations must wrap up soon, said Mr Howes.

The WTO was tasked by world leaders more than 20 years ago to establish rules to end these subsidies. "We're almost there," Santiago Wills, ambassador of Colombia to the WTO and chair of the negotiations, said of the talks. The subsidies that need removing total about US\$22bn, he said.

<sup>13</sup> <https://www.fao.org/state-of-fisheries-aquaculture>

<sup>14</sup> <https://www.fao.org/port-state-measures/en>

If governments implement strong long-term policies to sustainably manage the world's fisheries, fish stocks will recover. When that happens, fishers will be able to fish less and earn more, and fisheries will likely be more profitable.

In the meantime, governments, supply chains, retailers and customers will need to share the costs of helping fish stocks recover, said Maria Damanaki, independent advisor on climate and ocean for The Paradise Foundation.

### **Fishery standards are harder to attain due to costs and climate change acceleration**

Certification is a critical part of sustainable fish management. The MSC's Fisheries Standard is the leading international standard for sustainable fishing. However, fisheries that represent just 17% of global wild marine harvest are certified to the Standard.

Although there are costs involved in certification, the benefits include access to new markets, preferential selection in markets for some fisheries, a price premium, and improved relationships with communities and regulators, said Mr Howes.

Almost every fishery that has achieved certification in the past 20 years has come back to be recertified, said Mr Howe.

The most profound obstacle to scaling certification is global climate change, said Mr Howe. It is already impacting the reproductive well-being of fish and their migration patterns, and fisheries are losing MSC certifications as a result, he said.

Many fish stocks in Canada have recovered from overfishing in the 1960s, '70s and '80s, and 80% of fisheries by value are now MSC-certified. But climate change is preventing certain fish stocks from recovering, said Carey Bonnell, vice-president, sustainability and engagement at Ocean Choice International (OCI).



## Market leaders set precedent in sustainable fishing practices

Market-based programmes are part of the solution to overfishing, said several speakers at the summit. Providing consumers with information about sustainable fishing empowers them to make the best choices, which in turn rewards fishers who are working sustainably.

The leadership of major retailers attracts more fisheries into using sustainable practices. Walmart, for example, has stated a 2025 target to source all its canned tuna from fisheries that are certified as sustainable, are working towards that certification, or are engaged in a fishery improvement project.

Partnering with The Nature Conservancy and the Marshall Islands, the Walmart Foundation extends its mandate to put some profits back into communities that supply tuna to Walmart, to help those communities build resilience.

Walmart wants to drive industry-leading environmental, labour and traceability standards, said Jane Ewing, the company's senior vice-president for sustainability.

The market has been a remarkable driver for sustainable fishing, Mr Howes said.

"Ultimately all of us have responsibility for the choices we make. We must ask where our seafood comes from and is it sustainable. If not, don't buy it," he said.

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**Rupert Howes**, chief executive, **Marine Stewardship Council (MSC)**



## Industry tracks Plastics

If the present rate of growth continues, plastic production will double over the next 20 years.<sup>15</sup> Without global regulation and changes to the way plastics are made, this massive increase will create major problems for the ocean and for human health.

An estimated 11 million tonnes of plastic enters the ocean every year, according to the UN Environment Programme (UNEP).

Regulators, and plastic producers—who stand to make huge profits from the increased production—carry the main responsibility for preventing plastic pollution in the ocean, said Nina Jensen, chief executive of REV Ocean, a Norwegian non-profit tackling plastic pollution.

The plastics industry and value chain need to focus more on the end of life of products and make sure they are recyclable, said Marco ten Bruggencate, commercial vice-president of packaging and specialty plastics, EMEA at Dow.

The plastics industry is changing, and the drive to recycle has accelerated in the last two years, he added.

Dow itself is transforming, and wants to become a leading provider of circular solutions—to keep plastics being recycled and reused—with the lowest-possible carbon footprint, he said.

Making a product recyclable is not enough. Greater investment must go into improving collection and recycling systems, while intervention is

<sup>15</sup> <https://www.nature.com/articles/s41599-018-0212-7>

required to generate policies and marketplaces to support recycled plastic products. The EU, for example, has set targets for 30% of recycled content in packaging.

**“Making a product recyclable is not enough. Greater investment must go into improving collection and recycling systems, while intervention is required to generate policies and marketplaces to support recycled plastic products. The EU, for example, has set targets for 30% of recycled content in packaging.”**

“I see an industry which is very engaged to change,” said Mr ten Bruggencate. But the change has to be systemic, and this will take time, he added.

### **Collaboration is valuable at both small and large scales**

International collaboration is essential to address the global issue, panellists said.

However, localised forms of collaboration are important as well. Japan created new mechanisms for state and local governments to work with civil society during the covid-19 pandemic. These new pathways could be applied to plastic waste, said Atsushi Sunami, president of the Sasakawa Peace Foundation.

One choice of mechanism is the use of smartphone apps which bring the public and authorities together to tackle plastic waste. For example, the public can give authorities instant information on waste by uploading photographs showing what needs collecting, and where.

## Incentivise responsibility in the private sector through reward schemes

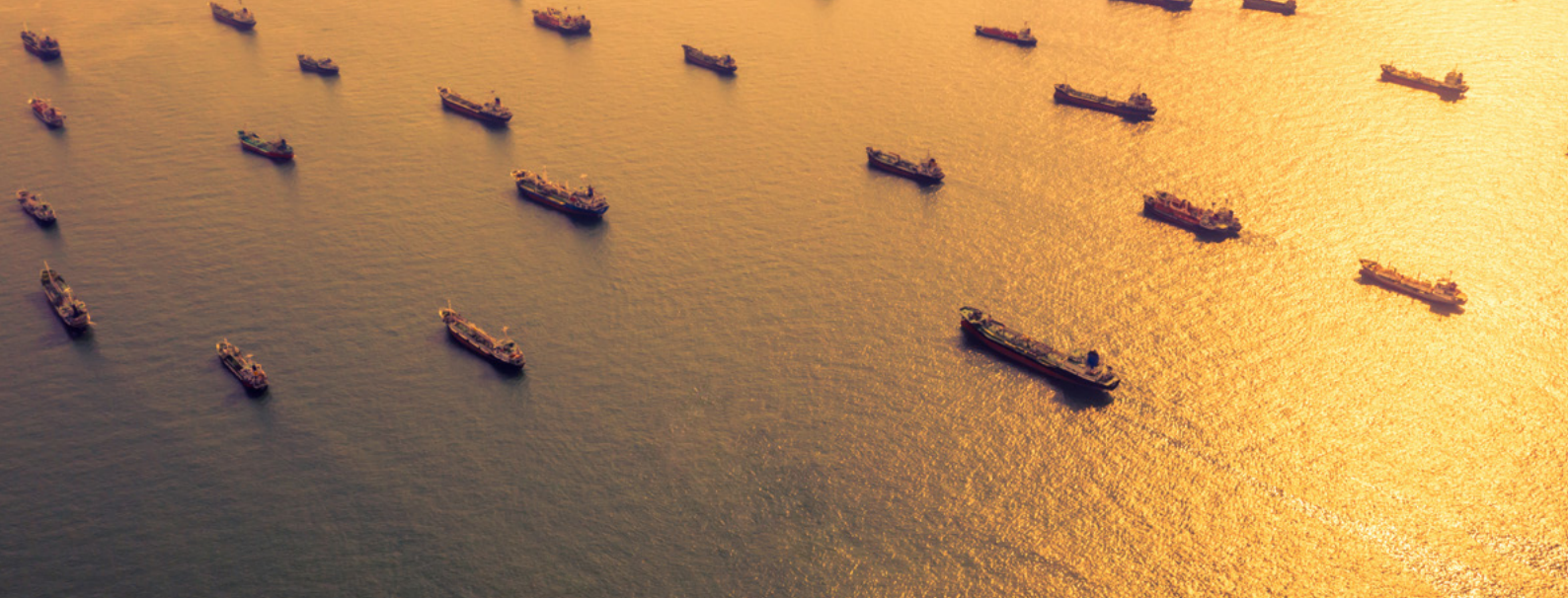
Collaboration between governments and the private sector is also important, but it will take a long time, said Umesh Phadke, president director of L'Oréal Indonesia.

Even if companies believe that reducing plastic waste and adopting circularity is the right thing to do, it has to be financially sustainable for them. Companies will do more to increase plastic circularity practices if the markets and governments reward them, said Mr Phadke.

Different solutions are needed for different markets to improve collection, segregation and recycling of plastics, he added.

Dow's Mr ten Bruggencate warned that solutions to reduce the amount of plastic entering landfill must not increase CO2 emissions. Decarbonisation and plastics circularity "need to go hand in hand", he said.





## Industry tracks **Shipping**

The shipping industry's shift to low-emission fuels continues to gather momentum, thus increasing the need for a strong regulatory framework to accelerate their uptake, leaders in the sector said.

The transition to new fuels has been the shipping industry's single biggest challenge, said James Woodrow, managing director of Swire Shipping, a Singapore-based company that has ships calling at 400 ports globally.

The industry is experimenting with potential solutions, but it needs regulators to establish a framework which will accelerate that change, Mr Woodrow said. Shipping has a current GHG emissions reduction goal of at least 50% by 2050 compared with 2008 levels.<sup>16</sup> However, the sector is being pressured to launch a tighter target of net-zero GHG emissions by 2050 as part of a new framework being discussed by the International Maritime Organisation (IMO), the industry's main governing body. If agreed to and formalised, this new objective will give certainty to the whole industry's course of action.

**“Shipping has a current GHG emissions reduction goal of at least 50% by 2050 compared with 2008 levels.<sup>16</sup>”**

<sup>16</sup> <https://www.imo.org/en/MediaCentre/HotTopics/Pages/Reducing-greenhouse-gas-emissions-from-ships.aspx>

The net-zero target would “send a very clear signal and have the shipping industry as a whole committing themselves to demand green fuels”, said Andreas Nordseth, director-general of the Danish Maritime Authority.

This ambitious course of action is backed by the World Shipping Council, which recently launched a green strategy paper for decarbonisation. The council is an industry trade association representing international liner shipping.

Container shipping companies have been strong first movers, but they comprise just 10,000 of the roughly 80,000 ships trading globally, said Mr Nordseth.

“Regulation makes sure that the whole shipping community—all the operators, all the owners—demand (green fuels),” said Mr Nordseth.

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**Andreas Nordseth**, director-general,  
**Danish Maritime Authority**

### **Present solutions fail to be affordable and readily available**

New low-carbon accommodations are expensive, with new fuels costing between US\$1,000 and US\$1,500 more per tonne than existing fossil-fuel oil, said Jeremy Nixon, chief executive of Ocean Network Express (ONE).

The industry needs to respond by levelling the global playing field to prevent risking the finances of companies making the shift to green fuels. This will require establishing a market-oriented mechanism based on a carbon price—such as a levy or a cap-and-trade system—as well as an international regulatory framework, the panellists said.

One potential lever is a levy on bunker fuel, paid at the point of bunkering. It has the advantages of being universal, transparent and purposeful, with the money going back to the IMO, said Mr Nixon. The levy could be used to help the industry decarbonise.

However, since the amount collected from a levy would be “astronomical”, it would take years to get international agreement on how it should be governed and spent, said Mr Nordseth.

**“The industry needs to respond by levelling the global playing field to prevent risking the finances of companies making the shift to green fuels. This will require establishing a market-oriented mechanism based on a carbon price—such as a levy or a cap-and-trade system—as well as an international regulatory framework, the panellists said.”**

Mechanisms are needed in the meantime that make solutions affordable, help fund the research and development of the new technologies, and help smaller shipping companies adopt the new technologies, said Quah Ley Hoon, chief executive of the Maritime and Port Authority of Singapore.

“We probably need a whole myriad of different measures, whether it’s green financing, lower interest rate loans or market-based mechanisms,” she said.

### **Importance of de-risking the transition to greener bunker fuels**

New fuels require standards and regulations to allow bunkering to take place, which can take years to develop. They also will need infrastructure to supply them and energy companies to produce them, said Ms Ley Hoon.

The shipping industry must work with energy companies to render these fuels accessible, cultivating infrastructure to deliver and store supplies, and standards and regulations for their use.



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**Quah Ley Hoon**, chief executive, **Maritime and Port Authority of Singapore**

And all these elements have to come together fast. Bunkering has to be ready by the time companies start trialling ammonia tankers—which could be within the next five years, said Ms Ley Hoon.

Singapore is bunkering two transition fuels—LNG (liquefied natural gas) and biofuels. Other green fuels in the pipeline are largely derived from green hydrogen. The two fundamental components are methanol and ammonia, but both have major safety issues: ammonia is very poisonous, and methanol has a lower flame point than fossil fuel, which raises fire protection issues.

Ship owners do not know what the next green fuel will be, so governments need to introduce instruments to de-risk investments made in conjunction with using green fuels. As ships are typically long-term investments lasting 30 or 40 years, governments and the IMO must ensure that shipping companies and operators that invest in green technology will be allowed to operate globally for at least the next 20 years, said Mr Nordseth.



## Industry tracks **Tourism**

As the pandemic eases and travel resumes, tourists are gradually returning to the world's coastal resorts. This recovery is much needed, as tourism typically contributes more than 50% of GDP in many small island states.

Given the disruptions to marine environments caused by the tourism sector, key players are taking steps to limit damaging behaviours. From curbing single-use plastics to partnering with local governments and investing in conservation, parts of the industry are becoming more sustainable, panellists said.

The Four Seasons Hotels, a hospitality group operating more than 100 hotels and resorts, claims that while luxury used to be associated with waste and gluttony, it is now defined as the ability of customers to enjoy their holiday while also valuing the environment.

"We believe sustainability is the new luxury," said Nathalie Corredor, senior vice-president, corporate development and chief of staff at Four Seasons Hotels and Resorts.

**"We believe sustainability is the new luxury."**

**Nathalie Corredor**, senior vice-president, corporate development and chief of staff, **Four Seasons Hotels and Resorts**

For Four Seasons, this means reducing single-use plastics. The hotel chain encourages its guests to bring their own refillable water bottles and uses refillable bottles for shampoos and other products in hotel rooms.

The group is working with local governments to create systems that enable it to compost and recycle its waste, and donate its surplus food. They also collaborate on coral reef projects to help foster thriving coastal barriers.

Minor International, a multinational based in Bangkok which runs 520 hotels in 56 countries, says sustainable tourism is a key part of its strategy.

The company audits its supply chains each year to check that suppliers are compliant with environmental, labour, and health and safety standards.

And it helps protect biodiversity and natural heritage by investing in local projects supporting wildlife and coral reefs, said Dillip Rajakarier, group chief executive of Minor International and chief executive of Minor Hotels.

The company also invests in disadvantaged youth as part of its sustainability strategy, developing vocational schools and university programmes.

The tourism industry and conservationists have a lot in common, including a desire to sustain natural environments that attract tourists, said Lisa Bishop, president of Friends of Hanauma Bay. The bay is a Marine Protected Area in Hawaii and a popular tourist attraction.

**“The tourism industry and conservationists have a lot in common, including a desire to sustain natural environments that attract tourists, said Lisa Bishop, president of Friends of Hanauma Bay. The bay is a Marine Protected Area in Hawaii and a popular tourist attraction.”**

Both players want to offer a good visitor experience, want the communities that host the natural resource to be sustainable, and want that natural resource to continue in perpetuity, Ms Bishop said.

Tourism companies should partner with community groups, which tend to do a lot of the conservation and restoration work on the ground. These partnerships should aim not only to create a better experience for visitors, but also leave the natural resource in better shape, said Ms Bishop.



### **Development activities need to account for marine impacts**

About 34% of the world's coasts are at high risk of degradation from coastal development, says UNEP.

Marine environments also need protection from land-based pollution, said Sally Yozell, senior fellow and director of environmental security at the Stimson Centre, a think-tank in Washington, DC.

Well-planned infrastructure inland can stop polluted water from entering estuaries, harming corals and seagrasses and other marine ecosystems.

If government, industry and ecological groups work together to protect drinking-water sources and coastal waters, then tourism and coastal communities can stay healthy and thrive, Ms Yozell said.



# World Ocean Outlook from the World Ocean Initiative

## Overview

The world is not on track to meet Sustainable Development Goal 14—to conserve and use oceans for sustainable development—but many solutions already exist to create a sustainable blue economy. This year holds important opportunities for global players to shape international ocean policy. Speakers and delegates at the World Ocean Summit hope these will result in a global agreement to protect 30% of the ocean by 2030, a WTO agreement to end subsidies which are harmful for fisheries, and a High Seas Treaty to give legal protections to international waters. Blue-economy sectors—including fisheries and shipping—are taking proactive action to protect ocean health and meet global ocean sustainability goals. With innovative vision, appropriate financial support and political will, we hope this momentum will continue to accelerate.

### Cross-cutting challenges and opportunities

#### Biodiversity loss

A sustainable future requires systems thinking and integration to achieve multiple co-benefits. Designing off-shore wind farms to protect biodiversity and create new marine habitats is one exciting option that is already being explored. Blue carbon is another innovation that can achieve various sustainability and regenerative outcomes such as habitat restoration, carbon sequestration and job creation, to name a few.

#### Climate change

The ocean is increasingly taking centre stage at high-level climate talks such as COP. This year must see increased global ambition to curb emissions from ocean activities, as well as implementation of commitments already made. Nature-based solutions that contribute to climate change mitigation and adaptation, such as improving and expanding mangrove forests or restoring coral reefs, must be part of policy considerations. Implementing “Chief Ocean Officers” as part of a net-zero or sustainability strategy is one emerging way to embed ocean-climate decisions within an organisation.

#### Ocean pollution

Back to Blue’s landmark report put the spotlight on a wide range of chemical pollutants endangering marine life. While the momentum to tackle plastic pollution is well under way, it is just beginning for other chemical pollutants. Raising awareness about the issue will be critical in creating a systemic and coordinated global response.

### Industry tracks

#### Aquaculture

Advanced satellite technologies and analytics could enable aquaculture farms to expand and run more efficiently in remote locations. At the same time, small-scale producers in developing countries—who produce the bulk of aquaculture—will need transfer of more basic technology from Western companies to avoid overusing chemicals, especially as warming waters increase disease outbreaks.

### Energy

Many countries will continue to scale up their off-shore wind capacity and invest in wave and tidal energy. Innovative large-scale deployments which use integrated design and systems thinking will continue to hit the water. These include ways to combine energy production with coastal protection, and ways to use the same space to produce solar and wind energy.

### Fisheries

Fish stocks in countries and regions with strong fisheries-protection policies will continue to recover. We hope that more fisheries will be protected, especially if the WTO ends harmful fishing subsidies soon. In the meantime, governments, supply chains, retailers and customers will need to find ways to share the costs of helping fish stocks recover.

### Plastics

If trends continue, plastic production will double over the next 20 years, so global regulation and changes in the way plastics are made will be vital to prevent major problems for the ocean and for human health. The plastics industry is changing, and the drive to boost recycling and build a circular economy will continue to accelerate.

### Shipping

The shipping industry's shift to low-emission fuels continues to gather momentum. The next year will be vital in overhauling industry models. If the IMO agrees to a new target of reaching net zero by 2050, this will give certainty to the whole industry's course of action.

### Tourism

Tourists are gradually returning to the world's coastal resorts, and a growing number of eco-aware travellers and consumers will likely start judging destinations based on sustainability credentials. There is growing action in parts of the tourism industry to help sustain the natural environments that attract tourists. Working with local policymakers and tourist-attracting activities such as scuba-diving or ocean sports to create comprehensive sustainable tourism plans will be a necessity.

**The World Ocean Initiative** combines deep research and pioneering events bringing leaders together to act effectively. We imagine an ocean in robust health and with a vital economy. **The World Ocean Summit** is our flagship event.

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